

**Profile of Medical Patients who
Were Assessed as Requiring
Observation-level Services
at Winnipeg Acute Care Hospitals
in 1998/99**

July 2002

Manitoba Centre for Health Policy
Department of Community Health Sciences
Faculty of Medicine, University of Manitoba

Sharon Bruce, PhD
Charlyn Black, MD, ScD
Charles Burchill, BSc, MSc
Suzanne De Haney, BSc, MSc

ISBN 1-896489-05-2

Ordering Information

If you would like to receive a copy of this or any other of our reports, contact us at:

Manitoba Centre for Health Policy
University of Manitoba
4th Floor, Room 408
727 McDermont Avenue
Winnipeg, Manitoba, Canada R3E 3P5
Order line: 204-789-3805
Fax: 204-789-3910

Or you can visit our WWW site at:
<http://www.umanitoba.ca/centres/mchp/reports.htm>

© Manitoba Health

For reprint permission contact the Manitoba Centre for Health Policy

ACKNOWLEDGEMENTS

The authors wish to acknowledge the contributions of many individuals whose efforts and expertise made it possible to produce this report. We appreciate the assistance of:

- WRHA staff from the departments of medicine, family medicine and emergency medicine for their feedback on study results.
- Colleagues who reviewed earlier drafts of the report: Trish Bergal, Carolyn DeCoster, Valerie Krym, Russell MacDonald, Noralou Roos, Evelyn Shapiro, Neil Swirsky, Jan Trumble Waddell, Lois Walker.
- Sam Sheps and Laurence Thompson for their detailed and insightful reviews.
- Shannon Lussier for her assistance in preparing this report.

We are indebted to Health Information Services (Manitoba Health) for maintaining the integrity of the database on which these analyses are based.

We acknowledge the Faculty of Medicine, Health Research Ethics Board at the University of Manitoba for their thoughtful review of this project. The Health Information Privacy Committee of Manitoba Health is kept informed of all MCHP deliverables for Manitoba Health. Strict policies and procedures to protect the privacy and security of data have been followed in producing this report.

The results and conclusions are those of the authors and no official endorsement by Manitoba Health was intended or should be implied. This report was prepared at the request of Manitoba Health as part of the contract between the University of Manitoba and Manitoba Health.

THE MANITOBA CENTRE FOR HEALTH POLICY

The Manitoba Centre for Health Policy (MCHP) is located within the Department of Community Health Sciences, Faculty of Medicine, University of Manitoba. The mission of MCHP is to provide accurate and timely information to health care decision-makers, analysts and providers, so they can offer services which are effective and efficient in maintaining and improving the health of Manitobans. Our researchers rely upon the unique Population Health Research Data Repository to describe and explain patterns of care and profiles of illness, and to explore other factors that influence health, including income, education, employment and social status. This Repository is unique in terms of its comprehensiveness, degree of integration, and orientation around an anonymized population registry.

Members of MCHP consult extensively with government officials, health care administrators, and clinicians to develop a research agenda that is topical and relevant. This strength along with its rigorous academic standards enable MCHP to contribute to the health policy process. MCHP undertakes several major research projects, such as this one, every year under contract to Manitoba Health. In addition, our researchers secure external funding by competing for other research grants. We are widely published and internationally recognized. Further, our researchers collaborate with a number of highly respected scientists from Canada, the United States and Europe.

We thank the University of Manitoba, Faculty of Medicine, Health Research Ethics Board for their review of this project. The Manitoba Centre for Health Policy complies with all legislative acts and regulations governing the protection and use of sensitive information. We implement strict policies and procedures to protect the privacy and security of anonymized data used to produce this report and we keep the provincial Health Information Privacy Committee informed of all work undertaken for Manitoba Health.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	vi
1.0 INTRODUCTION	1
1.1 Objectives	1
1.2 Observation Units	2
2.0 METHODS	4
2.1 Sample	4
2.1.1 Representativeness of Sample	4
2.2 Utilization Review Instrument	4
2.2.1 Observation Criteria Set	5
2.2.2 Acute and Subacute Criteria Sets	6
2.3 Data Collection	6
2.3.1 Admission Review	7
2.3.2 Subsequent Days in Hospital	7
2.4 Inter-Rater Reliability	7
2.5 Data Preparation	8
2.6 Ethical Approval	8
3.0 RESULTS	9
3.1 Level of Care on the Day of Admssion to Winnipeg Acute Care Hospital in 1998/99	9
3.2 Characteristics of Observation-level, Acute and Non-Acute (ALC) Medical Patients on the Day of Admission	10
3.3 Services Received by Patients Assessed as Requiring Observation-level Care on the Day of Admission	12
3.4 Level of Care on Day of Admission and Hospital Type	13
3.5 Level of Care Received After the Day of Presentation to Hospital	15
4.0 DISCUSSION	18
4.1 Characteristics of Patients who were Assessed as Requiring Observation-level Services on the Day of Admission	18
4.2 Differences Between Hospital Groups	18
4.3 Hospital Units Where Services are Provided	19
5.0 CONCLUSION	20

REFERENCES21

**APPENDIX I: Alternate Level Of Care
Categories**22

**APPENDIX II: Most Responsible Diagnoses Received By Medical
Patients who were Assessed As Requiring Observation-level Services
on the Day of Admission**24

**APPENDIX III: Diagnostic Tests and Procedures Received by Medical
Patients who were Assessed as Requiring Observation-level Services
on the Day of Admission**25

LIST OF TABLES

Table 1:	Level of Care Required on the Day of Admission by Hospital (Percent), Winnipeg, 1998/99	10
Table 2:	Characteristics of Medical Patients by Level of Care on Day of Admission, Winnipeg, 1998/99	11
Table 3:	Services Received by Patients Assessed as Requiring Observation-level Care on the Day of Admission, Winnipeg, 1998/99	13
Table 4:	Characteristics of Medical Patients who were Assessed as Requiring Observation-level Services on the Day of Admission by Hospital Group (Percent)	14
Table 5:	Level of Care Required on Subsequent Days in Hospital by Patients who Required Observation-level Services on the Day of Admission, Winnipeg, 1998/99	16

LIST OF FIGURES

Figure 1:	Level of Care Required on Day of Presentation to Hospital, Winnipeg, 1998/99	9
Figure 2:	Level of Care Required by Day of Hospitalization for Patients who Required Observation-level Services on the Day of Presentation, Winnipeg, 1998/99	17

EXECUTIVE SUMMARY

The purpose of this study was to provide a profile of medical patients who were assessed as requiring observation-level services, as defined by a utilization review instrument (InterQual), on the day of admission to Winnipeg acute care hospitals in 1998/99.¹ The goal of observation units is to assess the severity of illness to determine if admission to hospital is required. This is accomplished through a combination of reassessment, diagnostic testing and short-term treatment. A disposition to admit or discharge home is usually accomplished in 24 hours. It is important to note that not all the medical patients who were assessed as requiring observation-level services in this report received those services in an observation unit (in other words, they were not necessarily identified as "observation" patients by Winnipeg hospital staff.

The objectives of the study were to:

1. Describe the characteristics of medical patients who were assessed as requiring observation-level services on the day of admission to hospital;
2. Compare the characteristics of medical patients who were assessed as requiring observation-level services on the day of admission to medical patients who were assessed as requiring acute care unit-level services, and to those who were assessed as requiring an alternate level of care (ALC) (i.e, these patients were non-acute);
3. Describe the hospital services received by medical patients who were assessed as requiring observation-level services on the day of admission; and
4. Determine the level of care required on all days after the day of admission by medical patients who were assessed as requiring observation-level services on the day of admission.

This project was completed as a follow-up to the study "Acuity of Patients Hospitalized for Medical Conditions at Winnipeg Acute Care Hospitals" (Bruce et al., 2001).

Methods

Sample

The sample for this study consisted of adult medical patients who received care at and were discharged from one of the six Winnipeg acute care hospitals in 1998/99. Medical patients were defined according to hospital service codes, which are categories of medical practice specialties. The following

¹ Data abstraction began on the day patients presented to hospital regardless of whether they received an admission order that day. Because some patients received care in hospital for greater than 24 hours before they were formally admitted we created an artificial admission date corresponding to the date of presentation to hospital and the initiation of hospital services.

services were included: family medicine, internal medicine, allergy, cardiology, dermatology, endocrinology, gastroenterology, nephrology, neurology, respirology, rheumatology, oncology and hematology. A total of 150 records were randomly selected from, and reviewed at, each of the six acute care hospitals (slightly more than 150 records were reviewed at some hospitals for a total of 907 records).

Selection of a Utilization Review Instrument

The 1999 versions of the InterQual ISD Acute Care and Subacute Care Clinical Decision Support Criteria were used to assess the appropriateness of admission to, continued stay in and discharge from hospital. A criteria set for provision of observation-level services is located within the InterQual ISD Acute Care criteria. The subacute criteria are for patients who require a slower paced recovery and may be at risk for an acute exacerbation. While in some jurisdictions the subacute level of care may be provided in a facility that is structurally distinct from an acute care facility, this is not the case in Winnipeg; subacute care is appropriately delivered in Winnipeg acute care hospitals. These criteria underwent thorough review by physician and nursing members of a WRHA Working Group established for the "Acuity" study, and three practicing physicians not on the Working Group, to assess their applicability to the Winnipeg practice setting. The criteria were assessed to be relevant to the local practice setting.

The Working Group also developed a set of "Alternate Level of Care Criteria" specific to the Winnipeg health care environment (Appendix 1). The members of the Working Group who developed these criteria represented the following WRHA areas: medicine program, Personal Care Home program, and the home care program.

Review Process

Three abstractors were hired by the WRHA to review medical records at each of the six Winnipeg acute care hospitals. Abstractors reviewed the day of admission to hospital and all subsequent days of stay in hospital until a patient was no longer assessed as requiring the services of an observation or acute care medical unit. An alternate level of care was assigned to any remaining days in hospital after the patient was assessed as no longer requiring observation or acute care services. Inter-rater reliability tests were completed on each abstractor's records.

Key Findings and Recommendations

1. Observation services are an important component of the Winnipeg acute care hospital system

Almost twenty percent of medical patients in 1998/99 were assessed as requiring the level of services provided in an observation unit on the day of admission to Winnipeg acute care hospitals. Fifty percent (50%) of these

patients were aged 75 years and older. As described below, because of differences in recording practices at Winnipeg acute care hospitals, this estimate is likely underestimated. **Given that observation-level services are provided to about one in five medical patients on the day of admission, it is recommended that the WRHA develop a systems-wide strategy for delivery of this level of service.**

2. Differences May Exist in Admission Recording Practices at Winnipeg Acute Care Hospitals

Ten to eleven per cent (10-11%) of adult medical patients at the Health Sciences Centre, St. Boniface and Seven Oaks hospitals were assessed as requiring observation-level services on the day of admission to hospital. The proportion who were assessed as requiring observation-level services on the day of admission to the Concordia, Grace and Victoria hospitals ranged from 21% to 33%. This difference may be the result of different admission recording practices at these two groups of hospitals, rather than differences in the types of patients who present to the hospitals. Only a small proportion of the patients who were assessed as requiring observation-level services on the day of admission to the Health Sciences Centre, St. Boniface and Seven Oaks hospitals had lengths of stay from 1-3 days (14%), compared to the other three hospitals (60%). It may be a more common practice at the Health Sciences Centre, St. Boniface and Seven Oaks hospitals to not formally admit patients who require observation services and whose stay in hospital is expected to be very short. Key informant interviews with emergency department personnel revealed that some patients who require observation services at these facilities receive hospital services for 24 hours and longer without ever receiving an admission order. If a formal admission order is not recorded, a hospital abstract is not created and therefore no record of the hospitalization will be found in the administrative hospital file. **If this difference in recording does exist, then we have no doubt underestimated the proportion of medical patients who received observation-level services on the day of presentation to Winnipeg acute care hospitals in 1998/99. It is therefore recommended that Winnipeg acute care hospitals create hospital abstracts for all patients who receive hospital services. It is further recommended that once uniform recording practices are implemented across the Winnipeg acute care system, the WRHA reassess the extent to which observation services are provided to medical patients and determine if any differences do exist among Winnipeg acute care facilities.**

3. Emergency Departments are Providing Acute Care Medical Unit Level Services

Eighty percent (80%) of medical patients who were assessed as requiring observation-level services on the day of admission to hospital received those services in the observation unit or emergency room. However, 43% of medical patients assessed as requiring the services of an acute care unit on the

day of presentation to hospital received those acute care-level services in the observation unit or emergency room. Therefore, in addition to providing emergency and observation-level services, Winnipeg emergency department personnel provided acute care services to medical patients in 1998/99. The presence of patients in Winnipeg emergency departments who required placement on acute care medical units, and the requirement to provide acute care-level services to these patients, may have placed excess demands on the staff of these EDs and may have contributed to emergency department overcrowding. We have previously demonstrated that 42% of days spent in hospital by medical patients after the day of admission were non-acute and required an alternate level of care (Bruce et al., 2001). The majority of these non-acute days were spent by long-stay patients (those in hospital for longer than 30 days) awaiting placement for Personal Care Homes and chronic care facilities. Since 1998/99, the WRHA has undertaken significant efforts to decrease the length of time long-stay patients remain in hospital. However, while the average length of stay for medical long-stay patients decreased steadily between 1995/96 and 1999/00, long-stay patients still contribute more than a third of Winnipeg hospital days used by all medical patients. For short-stay patients (those in hospital for 30 days and less), the largest proportion of non-acute days were spent awaiting diagnostic tests and procedures, and arrangement of home care services. **It is therefore recommended that the WRHA continue to implement measures which will allow for the efficient transfer or discharge of non-acute patients from acute care medical units, thus facilitating transfer of acute patients from the emergency department.**

Conclusion

The provision of observation services is an important component of the care provided to medical patients at Winnipeg acute care hospitals. Almost one in five medical patients were assessed as requiring observation-level services on the day of admission to Winnipeg acute care hospitals in 1998/99. The provision of this level of care was especially important for the elderly. However, in addition to providing acute emergency and observation-level services to medical patients on the day of admission to Winnipeg acute care hospitals, emergency department personnel provided acute care-level services in 1998/99.

The presence of patients in Winnipeg emergency departments who required placement on acute care medical units, and the requirement to provide acute care services to these patients, may have placed excess demands on the staff of these emergency departments and may have contributed to emergency department overcrowding. The WRHA must therefore continue to improve the transfer and discharge of non-acute patients from acute care medical units. Finally, because of differences in recording practices at Winnipeg hospitals, the proportion of medical patients who received observation services in 1998/99 is likely underestimated in this report. Standard recording practices at all Winnipeg acute care facilities must be implemented to determine the extent of observation care provided to medical patients, and if differences exist among the six Winnipeg acute care facilities.

1.0 INTRODUCTION

A retrospective review of medical patients who received care at Winnipeg acute care hospitals during the 1998/99 fiscal year was completed by the Manitoba Centre for Health Policy (MCHP) and the Winnipeg Regional Health Authority (WRHA) to determine the proportion of admissions to and days in hospital that met standard criteria indicating an acute care hospital was required (Bruce et al., 2001). We found that 19% of medical patients on the day of admission to hospital did not require services provided on an acute care medical unit, but instead required services provided in an observation unit.¹ In addition, 3% of all subsequent days spent in hospital by medical patients required an observation unit rather than an acute medical unit setting.

The purpose of this study was to identify the characteristics of medical patients who received observation-level services on the day of admission to hospital, and describe the types of hospital services they received.

By the late 1990's a perception among many local clinicians and administrators was that observation units in Winnipeg acute care hospitals were not functioning well. Accordingly, discussions were held on the feasibility of closing these units. However, as demonstrated by Bruce (2001), on the day of admission in 1998/99, approximately one out of every five medical patients required a setting in which assessment and determination of severity of illness, and/or short-term treatment, could be provided. Also of importance is that 80% of these patients received their care in either the emergency department or observation unit on that day. Given recent reports of hospital overcrowding and pressures on emergency departments, and the perception that observation units are not functioning well, the WRHA was interested in further assessing the group of patients assessed as requiring observation.

The purpose of this exploratory study was therefore to identify the characteristics of medical patients who were assessed as requiring observation-level services on the day of admission to hospital, and describe the types of hospital services they received. We were also interested in determining how patients who were assessed as requiring observation-level services were different from those who required the services provided on acute care medical units. It is important to note that the group of patients studied for this report were not necessarily identified as "observation" patients by Winnipeg clinicians, nor did they necessarily receive their care in a Winnipeg acute care observation unit. Rather this group of patients was assessed as requiring the services provided in an observation unit setting, as defined by the InterQual™ ISD utilization review instrument. This project was completed as part of MCHP's contract with Manitoba Health.

1.1 Objectives

The objectives of the study were to:

1. Describe the characteristics of medical patients who, on the day of admission

¹ Data abstraction began on the day patients presented to hospital regardless of whether they received an admission order that day. Because some patients received care in hospital for greater than 24 hours before they were formally admitted we created an artificial admission date corresponding to the date of presentation to hospital and the initiation of hospital services.

- to Winnipeg acute care hospitals, were assessed as requiring observation-level services;
2. Compare the characteristics of medical patients who were assessed as requiring observation-level services on the day of admission to hospital to medical patients assessed as requiring an acute care unit on that day, and to those who were assessed as requiring an alternate level of care (i.e., these patients were non-acute);
 3. Describe the hospital services received by medical patients assessed as requiring observation services on the day of admission; and
 4. Determine the level of care required on all days after the day of admission to hospital by medical patients who were assessed as requiring observation-level services during the first 24 hours of their hospitalization.

1.2 Observation Units²

An emergency department observation unit is a designated area located within or contiguous to the emergency department (ED) of an acute care hospital in which patients are assessed to determine if admission to hospital is required. The majority of patients who present to EDs are evaluated by an approach which includes a single examination, tests and treatment. However, approximately 10% of patients who present to EDs are not effectively managed via this method, but require an approach which includes serial examinations and diagnostic tests, and perhaps, repeated treatments. Management of these patients may take up to 24 hours, at which time a disposition to discharge home or to admit to hospital is reached (Ross and Graff, 2001).

Candidates for observation units (OUs) are those who have a care goal such as diagnostic evaluation, short-term treatment, or management of psychosocial needs. Importantly, patients with chronic health problems are candidates for observation if they have an acute condition that requires treatment. Conditions requiring diagnostic evaluation that may be appropriate for Canadian OUs include: chest pain to rule out myocardial infarction; abdominal pain to rule out appendicitis; syncope; and head injury. Conditions for which short-term treatment may be provided in an observation unit include: asthma; dehydration/vomiting/diarrhea; congestive heart failure; pain control; infections, such as cellulitis and pneumonia; toxic ingestion; renal colic; transient ischemic attack; allergic reaction; exacerbation of chronic obstructive pulmonary disease; diverticulitis; and hypo- and hyperglycemia. Some psychosocial situations can also be effectively managed in the OU such as depression with suicidal ideation, mild acute exacerbation of chronic psychosis and geriatric patients with weak social supports (adapted from Ross and Graff, 2001).

According to studies completed in the United States, when observation units are appropriately used the benefits to the health care system include avoidance of unnecessary admissions, prevention of inappropriate patient release and

An emergency department observation unit is a designated area located within or contiguous to the emergency department (ED) of an acute care hospital in which patients are assessed to determine if admission to hospital is required.

² A paucity of literature exists on the operation of observation units in a Canadian context. Therefore the following limited review is based on "best-practice" for observation units (OUs) in the United States and has been adapted for the local practice environment.

When observation units are appropriately used the benefits to the health care system include avoidance of unnecessary admissions, prevention of inappropriate patient release and decreased length of stay.

decreased length of stay (approximately 80% of patients who receive their care in observation units have a shorter length of stay than patients admitted directly to hospital wards) (Ross and Graff, 1998). Chest pain observation units have been found to decrease the proportion of unnecessary admissions and also to significantly decrease the failure to diagnose acute myocardial infarction, compared to ED treatment without observation (Farkouh et al., 1998; Graff et al., 1997). Similar results have been reported for asthma, congestive heart failure, abdominal pain and infections such as cellulitis, pyelonephritis and pneumonia (for a review see Ross and Graff, 1998).

In addition to there being particular medical conditions that are well suited for treatment in an observation unit, two key utilization characteristics are also vital to successful management. These characteristics are severity of illness (SI) and intensity of service (IS). Severity of illness (SI) refers to the objective clinical indicators of patient illness on the day of presentation to hospital, while intensity of service (IS) relates to treatments and medications relevant to the severity of illness indicator. Observation patients should have limited SI and IS characteristics; patients with a high severity of illness will require services beyond the scope of the observation unit and should usually be admitted to an acute care ward (Ross and Graff, 2001). For this study, the severity of patient illness and the intensity of services received were measured with the InterQual® utilization review criteria.

2.0 METHODS

2.1 Sample

The sample for this study consisted of adult medical patients who received care at and were discharged from one of the six Winnipeg acute care hospitals in the 1998/99 fiscal year. The six Winnipeg acute care hospitals are the Health Sciences Centre, and the Concordia, Grace, Seven Oaks, St. Boniface and Victoria General Hospitals.

Medical patients were defined according to primary service codes, which are categories of medical practice specialties (e.g., internal medicine, cardiology). Primary service codes refer to the service under which the patient was treated for the greatest length of time. The following services were included: family medicine (01), internal medicine (10), allergy (11), cardiology (12), dermatology (13), endocrinology (14), gastroenterology (15), nephrology (16), neurology (17), respiratory (18), rheumatology (19), oncology (59), and hematology (66). A total of 150 records were randomly selected from, and reviewed at, each of the six acute care hospitals (slightly more than 150 records were reviewed at some hospitals for a total of 907 records).

Data analyzed were abstracted from the medical records of 907 adult medical patients who received care at one of the Winnipeg's six acute care hospitals in 1998/99.

2.1.1 Representativeness of Sample

The sample of records drawn at each hospital were tested to determine if they were representative of all 1998/99 medical separations from each respective facility. The samples at each hospital were tested on the following variables: mean length of stay; age; gender; most responsible diagnosis; and proportion of short- and long-stay hospitalizations, where a short stay is defined as a hospitalization from 1-30 days and a long-stay as a hospitalization of over 30 days. The samples drawn at each of the hospitals were representative of the entire year of medical separations at each institution on all of the variables with one exception. The sample selected from Seven Oaks was not representative of the 1998/99 medical separations at that site on average length of stay and proportion of short-and long-stay cases. The Seven Oaks sample had a significantly shorter average length of stay (10 days) than did the medical cases at Seven Oaks for 1998/99 (17 days), and under-represented the proportion of long-stay cases (i.e., the proportion of long-stay cases in the Seven Oaks sample and for all medical separations at Seven Oaks in 1998/99 was 6% and 11%, respectively).

2.2 Utilization Review Instrument

InterQual's 1999 ISD Clinical Decision Support Criteria were used to determine the level of care patients required on the day of admission to hospital and on all subsequent days of stay in hospital (InterQual®, 1999). In this study the day of "admission" was defined by the day the patient presented to hospital and not from the point when the patient received a

formal admission order, if the two were different. For the majority of cases described in this report the day of presentation and the day of admission were the same. However, for those cases in which the day of presentation preceded the day of admission by greater than 24 hours, review of the medical record began at presentation.

The InterQual criteria are used to assess the appropriateness of admission, continued stay in hospital and discharge. These three aspects of care are assessed through the construct ISD®: Intensity (of Service), Severity (of Illness), and Discharge (Screens). Severity of Illness (SI) refers to the objective clinical indicators of patient illness, Intensity of Service (IS) relates to treatments and medications relevant to the Severity of Illness indicator, and the Discharge Screens (DS) are objective clinical and operational parameters of patient stability, indicating discharge or transfer readiness. In order to be defined as an appropriate "admission" a patient must present to hospital with certain clinical indicators (i.e., Severity of Illness - SI) and receive specific treatments and/or medications to address the presenting illness (i.e., Intensity of Service - IS). On subsequent days of stay, the patient must receive specified treatments and/or medications (IS) in order to be assessed as appropriate for an acute care setting. When the patient no longer receives the types and levels of treatments required of an acute care setting, the Discharge Screen (DS) is applied to determine if he/she has achieved a level of physiological stability that warrants discharge or transfer to another level of care. The criteria are not diagnosis dependent but are based on the clinical indicators presented by the patient and are divided into categories according to the various body systems and broad disease categories (e.g., cardiovascular, respiratory, metabolic, infectious diseases).

2.2.1 Observation Criteria Set

The InterQual observation criteria comprise a subset of the acute care criteria. Patients were first assessed with the acute and subacute care criteria sets, and if they did not meet these, they were assessed with the observation criteria. Notably, the services provided at the observation level are of a lesser frequency and intensity than any of the other subsets within the acute care criteria. The observation criteria set is intended for patients whose clinical diagnosis is not clear but may be determined within 24 hours. If local policy permits, observation status can be extended to 48 hours if the patient is too unstable for discharge home but does not require admission to an acute care unit (InterQual, 1999).

InterQual Severity of Illness (SI) criteria for observation of patients presenting with medical conditions include the following categories: (1) general conditions, which consists of such cases as allergic reactions, bleeding, ingestion of a toxic substance, pain, elevated body temperature, and genitourinary difficulties; (2) cardiac/respiratory; (3) CNS (central nervous system);

(4) GI (gastrointestinal); and (5) metabolic. Each section contains a number of illness indicators with which patients may present to the ER (e.g., deep vein thrombosis; dyspnea). The Intensity of Services (IS) category includes assessment (e.g., assessment of bleeding, urine output, vomiting/diarrhea); monitoring (e.g., monitoring of vital and neurological signs, lab work, oximetry); administration of medications (does not include oral medications); administration of IV fluids; and oxygen by nasal cannula.³ A patient need only have received one service from the IS rule list in order to have been assessed as requiring an observation unit; however, that service had to have been provided either continuously or at least once every 4 hours. An important reminder to readers is that patients in this sample who were assessed as requiring observation-level services were not necessarily observation patients.

2.2.2 Acute and Subacute Criteria Sets

Two Level of Care criteria sets were used to assess appropriateness of hospitalization on an acute care medical ward: ISD-AC® Acute Care and ISD-SAC® Subacute Care. The acute care criteria are designed to assess appropriateness of admission to and continued care on an acute care unit. The subacute criteria are designed for patients who require a slower paced recovery and may be at risk for acute exacerbation. While in some U.S. cities separate facilities exist for the provision of subacute care, this is not the case in Winnipeg or other Canadian cities. Patients assessed as requiring care at the subacute level are appropriately receiving that care in Winnipeg acute care hospitals. In this report, the proportions of admissions and days assessed as acute and subacute have been combined to reflect total acuity.

The 1999 versions of InterQual® criteria sets underwent thorough review by practicing physicians and nurses to assess their applicability to the Winnipeg practice setting. The criteria were assessed to be relevant to the local practice setting.

2.3 Data Collection

Three data abstractors (two nurses and one physician) were hired by the WRHA. In preparation for the data abstraction process, the abstractors underwent a Personal Health Information Act (PHIA) training session at WRHA and signed Oaths of Confidentiality. Abstractors recorded patients' medical record numbers, dates of admission and separation (artificial admission dates were created for those patients whose formal admission occurred more than 24 hours after their presentation to hospital; the date of presentation was considered the date of "admission"), dates of birth and the services patients received on each day of hospitalization (described below). Patient names and addresses were not recorded. Data abstraction was completed between April and September 2000 and was facilitated through the use of InterQual's® Autobook®2, the Windows version of the criteria.

³ A complete listing cannot be provided because of the licensing agreement with InterQual.

Data abstractors underwent a Personal Health Information Act training session and signed Oaths of Confidentiality.

Data were entered directly into laptop computers supplied to each abstractor. Data collection could not have occurred without the efficient and capable assistance of the staff of the health records departments at each of the six hospitals.

2.3.1 Admission Review

"Admission" was defined as the first 24 hours from presentation to hospital. Each patient's medical record was assessed against the acute, subacute and observation criteria. If the patient met the acute, subacute or observation severity of illness (SI) and intensity of service (IS) criteria, the exact indicators under which they qualified were recorded. If the patient did not meet the acute, subacute or observation SI and IS criteria, the patient was considered non-acute and an alternate level of care (ALC) was assigned for that day (a complete listing of alternate care levels was developed by WRHA professional staff and is found in Appendix I).

2.3.2 Subsequent Days in Hospital

Each day after the day of admission to hospital was termed a "subsequent day", and was assessed by applying the acute, subacute and observation Intensity of Service (IS) criteria. If the patient met the IS criteria under one of the care levels, the abstractors recorded the indicators under which they qualified. When the patient no longer met the IS criteria, s/he was assessed with the Discharge Screen (DS) to determine readiness for discharge. If the patient met the discharge screen, indicating that s/he was stable for transfer or discharge, an alternate level of care was assigned to any remaining days of her/his hospitalization. Importantly, if a patient failed to meet the acute, subacute or observation IS criteria and also failed to meet the discharge screen (i.e., the patient was considered too unstable for discharge), the day was assessed as an acute day.

Quality control was assured through the provision of a thorough training session and inter-rater reliability tests.

2.4 Inter-Rater Reliability

Quality control was assured through the provision of a thorough training session, including the opportunity to complete data abstraction on a sample of "practice" medical records, and ongoing communication between the abstractors and the project coordinator (SB). Inter-rater reliability tests were also completed on each abstractor's records, from two to three times, depending on their length of employment. Reliability was evaluated on two measures: (1) crude agreement; and (2) Cohen's kappa coefficient, which is a measure of agreement that corrects for chance (Fleiss, 1981). Reliability tests were first conducted during the first two weeks of the project. The initial levels of crude agreement ranged from 40-90%. The records for which the level of crude agreement was less than 85% were re-abstracted. The levels of crude agreement between the project coordinator and the abstractors on subsequent evaluations ranged from 90-95%. Cohen's kappa coefficient

ranged from 0.70-0.81, representing good to very good agreement beyond chance.

2.5 Data Preparation

The first two objectives of the study were to describe the characteristics of all patients who were assessed as requiring observation-level services on the day of admission (n=169) and compare them to patients who were assessed as acute (n=690) and to those requiring an alternate level of care on that day (n=48). Comparisons were completed on the following characteristics: age, sex, living arrangements prior to admission, length of stay, socioeconomic status (assessed by income status), and unit/ward in which hospital services were provided. For each day of the patient's hospitalization, abstractors recorded the unit or ward on which the patient was located (e.g., medical ward, ICU, emergency department, observation unit). Because it was not always clear to abstractors if patients were in an observation bed or in a emergency department stretcher, these two locations were combined for a "ED/OU" category. Observation beds at the hospitals included in this report are contiguous with the respective emergency departments. Data for the remaining variables were derived from patient medical records and the census file from the administrative database (socioeconomic status). Chi-square tests were completed to compare the patients assessed as requiring observation-level, acute and alternate levels of care on the day of admission.

The first two objectives were to describe the characteristics of all patients who required observation-level services on the day of presentation to hospital, and compare them to patients who were assessed as acute and to those requiring an alternate level of care on that day; the third objective was to describe the services received by patients assessed as requiring observation on the day of presentation to hospital.

The third objective of the study was to describe the services received by patients assessed as requiring observation-level services on the day of presentation to hospital. This description was facilitated through the use of an Access database. The Access database was constructed from two sources: (1) data abstracted from patient medical records; and (2) the hospital file from the administrative database. Abstracted data selected for the Access database included: age; sex; hospital in which services were provided; unit on which the patient received hospital services on the day of presentation to hospital; patient's living arrangements prior to admission; InterQual Severity of Illness (SI) indicators (i.e., the condition which brought them to hospital, for example, dyspnea or pulmonary infiltrate); and InterQual Intensity of Service (IS) indicators (i.e., the hospital services the patient received relative to the condition for which they were hospitalized, for example, monitoring of vital signs or administration of antibiotics). Data selected from the administrative hospital file included: most responsible diagnosis; and surgical procedures and treatments received.

2.6 Ethical Approval

This study was approved by the University of Manitoba Health Research Ethics Board.

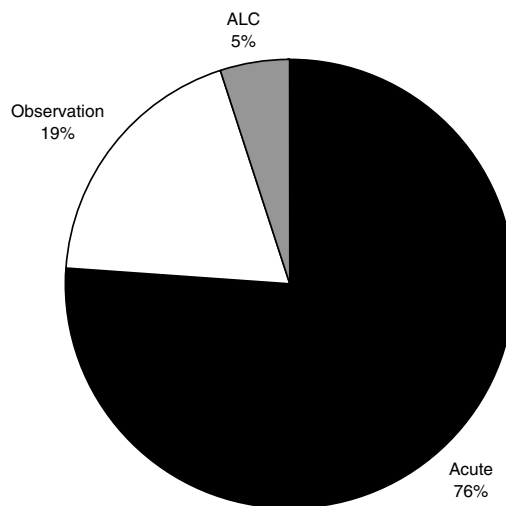
3.0 RESULTS

3.1 Level of Care on the Day of Admission to Winnipeg Acute Care Hospital in 1998/99

The level of care required on the day of admission to hospital is presented in Figure 1. Nineteen percent (19%; n=169) of adult medical patients in 1998/99 were assessed as requiring observation-level services on the day of admission, 76% (n=690) were assessed as requiring acute care level services, (71% acute, 5% subacute) and 5% (n=48) were assessed as non-acute (i.e., an alternate level of care was assigned).

Figure 1: Level of Care Required on Day of Presentation to Hospital, Winnipeg, 1998/99

Almost one in five medical patients (19%) required the level of services provided in an observation unit on the day of presentation. More than 3/4 (76%) required acute care services and only 5% were assessed as non-acute.



The level of care required on the day of admission to hospital is listed by hospital in Table 1. Great variability was observed in the proportion of medical patients who were assessed as requiring observation-level services on the day of admission. Approximately 10% of adult medical patients at the Health Sciences Centre, St. Boniface and Seven Oaks General Hospitals were assessed as requiring observation-level services on that day. The proportion of patients who required observation-level services at the Concordia, Victoria and Grace General ranged from 21% to 33%.

Table 1: Level of Care Required on the Day of Admission by Hospital (Percent), Winnipeg, 1998/99

Care Level	Health Sciences Centre	St. Boniface	Seven Oaks	Concordia	Victoria	Grace
Observation	15 (10%)	18 (11%)	17 (11%)	31 (21%)	38 (25%)	50 (33%)
Acute	134 (89%)	133 (85%)	131(87%)	106 (71%)	104 (69%)	82 (55%)
ALC	‡	6 (4%)	‡	12 (8%)	9 (6%)	18 (12%)

ALC= alternate level of care or non-acute (see appendix 1).

‡ MCHP does not report data when fewer than 5 individuals are represented per category.

The percent of patients who required observation-level services varied widely among the six hospitals, ranging from 10% to 33%. The percent who required acute services also varied considerably, ranging from 55% to 89%.

3.2 Characteristics of Observation-level, Acute and Non-Acute (ALC) Medical Patients on the Day of Admission

Characteristics of this sample of patients by the level of care they required on the day of admission to hospital is provided in Table 2.

Table 2: Characteristics of Medical Patients by Level of Care on Day of Admission, Winnipeg, 1998/99

	Level of Care Required on Day of Admission to Hospital		
	Observation (%) (n=169)	Acute (%) (n=690)	ALC (%) (n=48)
Age Group*			
17-34	18 (11%)	48 (7%)	‡
35-54	27 (16%)	107 (15%)	‡
55-74	39 (23%)	254 (37%)	10 (21%)
75+	85 (50%)	281 (41%)	33 (69%)
Sex			
Male	84 (50%)	358 (52%)	20 (42%)
Female	85 (50%)	332 (48%)	28 (58%)
Living Arrangements Prior to Hospitalization			
Spouse/Family	91 (54%)	402 (58%)	25 (52%)
Alone	57 (34%)	218 (32%)	17 (35%)
Care Facility	7 (4%)	44 (6%)	‡
Not Recorded	14 (8%)	26 (4%)	‡
Length of Stay (Days)			
Median LOS	4	6	4
Mean LOS* □	13.9	14.4	6
Income Quintile			
Q1 (low)	42 (28%)	157 (28%)	12 (30%)
Q2	35 (23%)	126 (22%)	7 (17.5%)
Q3	18 (12%)	121 (22%)	10 (25%)
Q4	28 (19%)	79 (14%)	7 (17.5%)
Q5 (high)	27 (18%)	76 (14%)	‡
Unit Where Care Provided on Day of Admission*			
OU or ER	135 (80%)	297 (43%)	29 (60%)
Med/Surg/ICU	34 (20%)	393 (57%)	14 (29%)

• Some categories will not sum to total sample size because of missing data.

* Indicates statistically significant difference between patient groups ($p < .05$).

‡ MCHP does not report data when fewer than 5 individuals are represented per category.

□ Income quintiles are based on postal codes which have been sorted by average household income value (lowest to highest). This information is based on publicly available census data from 1996 that provided household income at the Enumeration Level. Postal code information values were classified by average income from lowest to highest, so that approximately 20% of the population was present in each quintile. This analysis was based on Winnipeg residents only because of the small numbers of non-Winnipeg residents included in the sample.

Therefore category totals do not sum to the total sample size.

A significantly greater proportion of observation and ALC (non-acute) patients were aged 75 years and older compared to those medical patients who required acute care services on the day of admission.

Equal proportions of males and females were found in each care level group. No statistically significant differences between the groups were found for income quintile, a measure of socioeconomic status, or patients' living arrangements prior to their hospitalization. With regard to living arrangements prior to the hospitalization, 52-58% of patients in each care level reported living with their spouse and/or family prior to the hospitalization and another 32-35% reported living alone. Statistically significant differences between the groups were found on age, length of stay, and the unit where care was provided on the day of admission. A significantly greater proportion of observation and ALC (non-acute) patients were aged 75 years and older compared to those medical patients who required acute care services on the day of admission. Medical patients who were assessed as requiring an alternate level of care on the day of presentation to hospital had a significantly shorter mean length of stay than patients who were assessed as requiring observation-level and acute services. The mean length of stay for patients who required acute, observation-level and non-acute (i.e., ALC) services was 14.4 days, 13.9 days, and 6 days, respectively. Medical patients who were assessed as requiring observation-level services on the day of admission were significantly more likely to receive those services in either the ER or OU on that day, compared to patients who required acute care services. Interestingly, 43% of patients assessed as requiring the services of an acute care unit on the day of admission received those acute-care level services in the observation unit or emergency room.

3.3 Services Received by Patients Assessed as Requiring Observation-level Care on the Day of Admission

The mean length of stay for patients who required acute, observation and non-acute (i.e., ALC) services was 14.4 days, 13.9 days, and 6 days respectively.

The entrance complaints and hospital services received by patients assessed as requiring observation-level care on the day of admission are found in Table 3. The entrance complaints are grouped into eight main categories and are listed in the first two columns; these categories correspond to the reason for the hospitalization and were constructed according to the Severity of Illness (SI) indicator recorded by the data abstractors for each patient. The hospital services received by medical patients on the day of admission are listed in the third column and include: diagnostic lab work (e.g. blood, urine, cerebrospinal fluid); monitoring of vital signs; neurological checks; monitoring of urine output, bleeding, vomiting and/or diarrhea; and administration of medications (excluding oral medications). Recall that in order to be assessed as an observation-level patient, any one of these services had to have been received either continuously (e.g., oxygen by nasal cannula and oximetry) or at least every four hours (e.g., monitoring of vital signs) within a 24-hour period. As noted in Table 3, patients who were assessed as requiring observation-level care on the day of admission received minimal services, and the types of services received during this time of continued assessment were not complex.

Table 3: Services Received by Patients Assessed as Requiring Observation-level Care on the Day of Admission, Winnipeg, 1998/99

Entrance Complaint		Services Received
Category	Percent	
Disorientation/ Confusion/ Neurological Deficit	29%	Monitoring of: - vital signs; lab work; oximetry or arterial blood gases; neurological signs; urine output; arrhythmias; diarrhea vomiting; bleeding. Administration of: - IV fluids at ≥ 75 ml/hr; oxygen via nasal prongs; blood products. - Medications: analgesics; bronchodilators; corticosteroids; antiemetics; antibiotics; diuretics; anticoagulants; antiarrhythmics; H ₂ blockers; anticonvulsants.
Pain	18%	
Dyspnea	17%	
Syncope/Presyncope	9%	
Dehydration/ Vomiting/ Diarrhea	8%	
Chest Pain	8%	
Bleeding	3%	
Other	8%	

As noted in Table 3, patients who were assessed as requiring observation on the day of admission received minimal services and the types of services received during this time of continued assessment were not complex.

Example of Services Received by Observation Patient on the Day of Presentation to Hospital

A 71-year old female presented to hospital with a one-day history of increased shortness of breath. Vital signs on admission: HR: 84; BP: 150/76; T: 36.9°C. O₂ sat: 90%. Medical history included congestive heart failure. The patient was placed on 3L O₂ and received a chest x-ray, repeated oximetry, and two doses of bronchodilators by nebulizer and diuretics via IV. After approximately 20 hours, the patient's O₂ had worsened to 89%. Arterial blood gases revealed a PO₂ of 52 mmHg and her RR had increased to 26. The patient was transferred to the medical ward.

The most responsible diagnoses and surgical tests and diagnostic procedures received by medical patients who were assessed as requiring observation-level services on the day of admission are listed in Appendix 2 and 3, respectively.

3.4 Level of Care on Day of Admission and Hospital Type

As noted in Table 1, wide variation was found by hospital in the proportion of patients who were assessed as requiring observation-level services on the day of admission. At the Health Sciences Centre, St. Boniface and Seven Oaks General Hospitals approximately 11% of medical patients were assessed as requiring observation-level services on the day of admission, whereas the proportion varied between 21% and 33% for the Concordia,

Victoria and Grace General Hospitals. These six hospitals were grouped into two types based on the proportion of patients who were assessed as requiring observation-level services upon admission. Differences between them were then explored on the following variables: age, length of stay and entrance complaint. Group 1 hospitals include the Health Sciences Centre, St. Boniface and Seven Oaks General Hospitals, and Group 2 hospitals include the Concordia, Grace and Victoria General Hospitals (see Table 4).

At the Health Sciences Centre, St. Boniface and Seven Oaks General Hospitals (Group 1) 11% of medical patients required observation-level services on the day of presentation, whereas the proportion varied between 21% and 33% for the Concordia, Victoria, and Grace General Hospitals (Group 2). Only 14% of Group 1 patients who required observation-level services on the day of presentation had hospital stays of 1-3 days, compared to 60% of Group 2 patients.

Table 4: Characteristics of Medical Patients who were Assessed as Requiring Observation-level Services on the Day of Admission by Hospital Group (Percent)

Variable	Category	Hospital Group	
		Group 1	Group 2
Age Group	17-34	‡	12%
	35-54	16%	16%
	55-74	28%	21%
	75+	48%	51%
Length of Stay*	1-3 Days	14%	60%
	4+ Days	86%	40%
Entrance Complaint	Disorientation	42%	23%
	Pain	10%	21%
	Dyspnea	16%	18%
	Syncope	12%	8%
	Dehydration	‡	10%
	Chest Pain	10%	7%
	Bleeding	‡	4%
	Other	‡	9%

Group 1 hospitals = Health Sciences Centre, St. Boniface, Seven Oaks.

Group 2 hospitals = Concordia, Grace, Victoria.

‡ MCHP does not report data when fewer than five individuals are represented per category.

*Statistically significant difference

The age distribution between the two hospital groups was similar. A greater proportion of patients at the Group 1 hospitals presented with disorientation than at the Group 2 hospitals. Statistically significant differences between the two hospital groups were found on length of stay. At the Group 1 hospitals (i.e., Health Sciences Centre, St. Boniface and Seven Oaks) significantly fewer patients who were assessed as requiring observation-level services on the day of admission had stays in hospital from 1-3 days compared to the Group 2 hospitals (i.e., Concordia, Grace, Victoria).⁴

⁴ No statistically significant differences were found between the two hospital groups on length of stay for patients who required acute care services on the day of presentation to hospital.

3.5 Level of Care Received After the Day of Presentation to Hospital

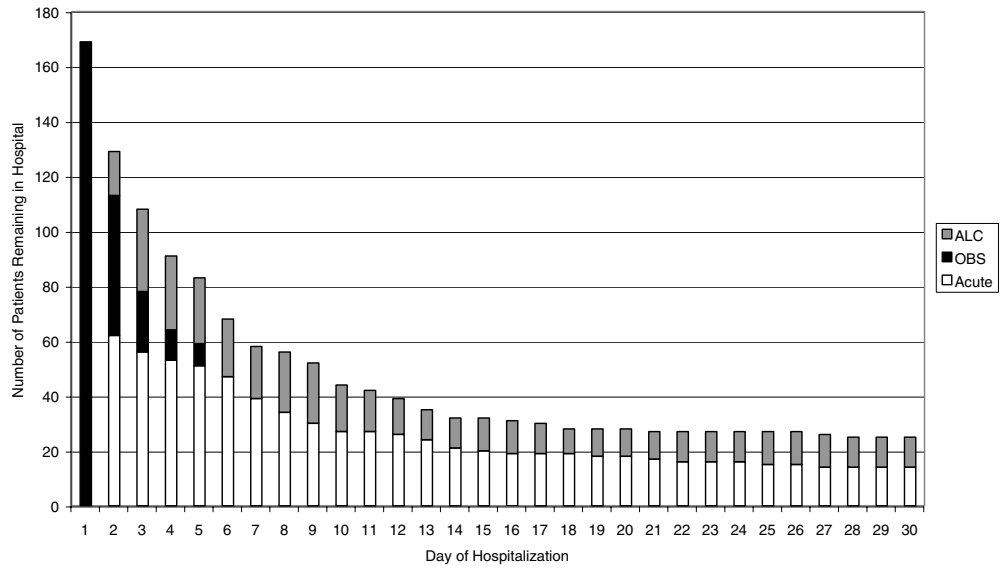
Almost one in five medical patients were assessed as requiring observation-level services on the day of admission to Winnipeg acute care hospitals in 1998/99. The level of care required on subsequent days of stay in hospital by this group of patients is found in Table 5. The day in hospital is found in column one and ranges from day 1 through day 30 (86% of patients assessed as requiring observation-level services on the day of admission to hospital had a length of stay from 1- 30 days); day 1 represents the day of admission to hospital. The second column contains the number of patients remaining in hospital on each subsequent day of stay. The numbers of patients who required observation-level, acute and non-acute services on each subsequent day of stay in hospital are listed in columns three through five.

As expected the number of patients who required observation-level services after the day of admission decreased quickly. On day two, 51 of the patients who required observation-level services on day one continued to receive this level of service, 62 patients went on to require acute care services, 16 patients required non-acute services (i.e., ALC), and 40 had been discharged. On day three, 108 patients remained in hospital and 22 continued to require observation-level services, 56 required acute care services, and 30 required an alternate level of care. After day five no patients required further observation-level services. The proportion of patients who required acute services also decreased over time. After day five less than 70% of remaining patients required acute care services and after day 21, less than 60% of patients remaining in hospital required the services of an acute care hospital. In other words, by day 21, at least 40% of remaining patients could have been cared for in an alternate setting. These data are graphically presented in Figure 2. A similar pattern was found for patients who were initially assessed as requiring acute care on the day of admission (Bruce et al., 2001).

Table 5: Level of Care Required on Subsequent Days in Hospital by Patients who Required Observation-level Services on the Day of Admission, Winnipeg, 1998/99

Day in Hospital	Number of Patients Remaining in Hospital	Level of Care (number of patients)					
		Observation		Acute		Non-Acute	
1	169	169	%	N/A	(%)	N/A	(%)
2	129	51	(40%)	62	(48)	16	(12)
3	108	22	(20)	56	(52)	30	(28)
4	91	11	(12)	53	(58)	27	(30)
5	83	8	(10)	51	(61)	24	(29)
6	68	0		47	(69)	21	(31)
7	58	0		39	(67)	19	(33)
8	56	0		34	(61)	22	(39)
9	52	0		30	(58)	22	(42)
10	44	0		27	(61)	17	(39)
11	42	0		27	(64)	15	(36)
12	39	0		26	(67)	13	(33)
13	35	0		24	(69)	11	(31)
14	32	0		21	(66)	11	(34)
15	32	0		20	(62.5)	12	(37.5)
16	31	0		19	(61)	12	(39)
17	30	0		19	(63)	11	(37)
18	28	0		19	(68)	9	(32)
19	28	0		18	(64)	10	(36)
20	28	0		18	(64)	10	(36)
21	27	0		17	(63)	10	(37)
22	27	0		16	(59)	11	(41)
23	27	0		16	(59)	11	(41)
24	27	0		16	(59)	11	(41)
25	27	0		15	(56)	12	(44)
26	27	0		15	(56)	12	(44)
27	26	0		14	(54)	12	(46)
28	25	0		14	(56)	11	(44)
29	25	0		14	(56)	11	(44)
30	25	0		14	(56)	11	(44)

Figure 2: Level of Care Required by Day of Hospitalization for Patients who Required Observation-level Services on the Day of Presentation, Winnipeg, 1998/99



After the fifth day, no patients remaining in hospital who required observation-level care on the day of presentation to hospital continued to require such services.

4.0 DISCUSSION

4.1 Characteristics of Patients who were Assessed as Requiring Observation-level Services on the Day of Admission

Fifty percent (50%) of the medical patients who were assessed as requiring observation-level services on the day of admission to Winnipeg acute care hospitals in 1998/99, were aged 75 years and older. Age was the only demographic characteristic that distinguished those who were assessed as requiring observation-level services on the day of admission from those who required acute care-level services. No statistically significant differences were found between these two groups on sex, socioeconomic status, or living arrangements prior to hospitalization. It is clear then, that observation services are especially relevant to the elderly. It is also clear by the types and frequency of services received by these patients during the first 24 hours from presentation to hospital that they did not require direct placement on an acute care medical ward. However, that initial 24 hours provided medical and nursing staff the time to decide if continued hospitalization was warranted and the types of services that would be required.

Observation services are especially relevant to the elderly.

4.2 Differences Between Hospital Groups

Nineteen percent (19%) of adult medical patients in 1998/99 were assessed as requiring observation-level services on the day of admission to Winnipeg acute care hospitals. However, differences were found among the hospitals that may be related to different practices in the recording of patients who receive care at these facilities. We found that only a small proportion of the patients who were assessed as requiring observation-level services on the day of admission to the Health Sciences Centre, St. Boniface General Hospital and Seven Oaks hospitals, had lengths of stay from 1-3 days compared to the other three hospitals. Key informant interviews with emergency room personnel revealed that patients who require observation-level services at HSC, SBGH and SOGH may receive hospital services for 24 hours and longer without ever receiving a formal admission order. For example, Seven Oaks has a care map for patients who present with congestive heart failure exacerbation which outlines care to be delivered for up to 48 hours in the observation unit without formal admission. Should such patients become stable enough for discharge within the 48 hour time frame, they are not formally admitted to hospital. The implication of this practice is that if a formal admission order is not written a hospital abstract is not created. Without a hospital abstract, there is no record of the patient in the administrative hospital file. This means that an undeterminable number of patients who received hospital services were not eligible for inclusion in our sample because there is no formal record of their attendance at hospital even though they may have been resident in the hospital and received services for greater than 24 hours. Because of these differences in admission recording practices,

It is recommended that each Winnipeg acute care hospital create hospital abstracts for all patients who receive hospital services.

we have no doubt underestimated the proportion of patients who required observation-level services on the day of admission to hospital. It is also possible that, the differences we found between hospital groups in the proportion of patients who required observation-level services on the day of admission are related to different admission recording practices, rather than differences in patient illness severity on the day of admission. Therefore it is recommended that Winnipeg acute care hospitals create abstracts for all patients who receive hospital services. It is further recommended that once uniform recording practices are implemented across the Winnipeg acute care system, the WRHA reassess the extent to which observation services are provided to medical patients and determine if any differences do exist among Winnipeg acute care facilities.

4.3 Hospital Units Where Services are Provided

A not unexpected finding was that the majority of patients who were assessed as requiring observation-level services on the day of admission received those services in the observation unit or emergency room. However, of great interest is that on the day of admission, 43% of patients assessed as requiring the services of an acute care unit, received those acute care-level services in the observation unit or emergency room. Therefore, in addition to providing emergent and observation-level services, Winnipeg acute care hospital emergency department personnel provided acute care-level services to medical patients in 1998/99. The provision of acute care-level services to medical patients in Winnipeg acute care emergency departments may have placed excess demands on the staff of these EDs and may have contributed to emergency department overcrowding.

On the day of presentation to Winnipeg acute care hospitals, 43% of patients assessed as requiring the services of an acute care unit received those acute level services in the observation unit or emergency room.

We have previously demonstrated that 42% of days spent in hospital by medical patients after the day of admission were non-acute and required an alternate level of care (Bruce et al., 2001). The majority of these non-acute days were spent by long-stay patients (those in hospital for longer than 30 days) awaiting placement for Personal Care Homes and chronic care facilities. Since 1998/99, the WRHA has undertaken significant efforts to decrease the length of time long-stay patients remain in hospital. However, while the average length of stay for medical long-stay patients decreased steadily between 1995/96 and 1999/00, long-stay patients still contribute more than a third of Winnipeg hospital days used by all medical patients. For short-stay patients (those in hospital for 30 days and less), the largest proportion of non-acute days were spent awaiting diagnostic tests and procedures, and arrangement of home care services. Given the reports of emergency department overcrowding and the resulting pressures on staff, it is recommended that the WRHA continue to implement measures which will allow for the efficient discharge or transfer of non-acute patients from acute care medical units, thus facilitating transfer of patients who require acute care-level services from the emergency department.

5.0 CONCLUSION

The provision of observation services is an important component of the care provided to medical patients at Winnipeg acute care hospitals. Almost one in five medical patients who presented to Winnipeg acute care hospitals in 1998/99 were assessed as requiring observation-level services on that day. The provision of this level of care was especially important for the elderly. However, as a result of differences in admitting recording practices, we have likely underestimated the proportion of medical patients who require observation-level services on the day of admission. Standard recording practices at all Winnipeg acute care facilities must be implemented to determine the extent of observation care provided to medical patients, and if differences exist among the six Winnipeg acute care facilities.

In addition to providing acute emergency and observation-level services to medical patients on the day of admission to Winnipeg acute care hospitals, emergency department personnel provided acute care-level services to medical patients in 1998/99. The provision of acute care-level services, in addition to emergency and observation services, no doubt placed excess demands on personnel and contributed to emergency department overcrowding. The WRHA must therefore continue to improve the transfer and discharge of non-acute patients from acute care medical units, thus facilitating movement of patients who require acute-care level services from the emergency department. Given that observation-level services are provided to 20% of medical patients on the day of admission, it is imperative that the WRHA develop a systems-wide strategy for management and delivery of this level of service.

REFERENCES

Bruce S, DeCoster C, Trumble Waddell J, Burchill C, De Haney S. Acuity of Patients Hospitalized for Medical Conditions at Winnipeg Acute Care Hospitals, Winnipeg, MB, Manitoba Centre for Health Policy and Evaluation, University of Manitoba, June 2001.

Farkouh ME, Smars PA, Reeder GS, Zinsmeister AR, Evans RW, Meloy TD, Kopecky SL, Allen M, Allison TG, Gibbons RJ, Gabriel SE. A clinical trial of a chest-pain observation unit for patients with unstable angina. Chest Pain Evaluation in the Emergency Room (CHEER) Investigators. *N Engl J Med* 1998 339;(26):1882-1888.

Graff L, Kelara J, Ross M, et al. Chest pain evaluation registry (CHEPER) study: Impact on the care of the emergency department chest pain patient. *Am J Cardiol* 1997;80:563-568.

Ross MA, Graff LG. Presenting the observation unit concept to administration and payers. In *Observation Units. Implementation and Management Strategies*, Graff LG, ed. Dallas, American College of Emergency Physicians, 1998.

Ross MA, Graff, LG 4th. Principles of observation medicine. *Emerg Med Clin North Am* 2001 19(1):1-17.

APPENDIX I: Alternate Level of Care Categories

Category	Criteria/Definition
Residence	People who can go home
Outpatient Services	<p>Non-acute patients who require tests and elective procedures that are provided by specialty physicians in an outpatient setting. Examples include:</p> <ul style="list-style-type: none"> - Cardiology procedures - Neurological assessment - Endoscopic procedures - CT Scan - MRI
Home Care	<p>Persons who require support to remain in the community upon discharge from an acute care facility may be eligible for home care, based on the identified risk to the person's health and functional status. Where family and community cannot provide the supports, home care direct services will be identified as part of the plan. home care services include:</p> <ul style="list-style-type: none"> - case management - nursing - occupational and physical therapy - personal care (activities of daily living) - household assistance - assessment and access to long-term care programs (adult day programs, supportive housing, companion care) <p>home care programs include:</p> <ul style="list-style-type: none"> - respiratory (for those who require oxygen and meet program criteria) - palliative care - ostomy - community IV
Palliative Care	<ul style="list-style-type: none"> • Hospital-based program for patients who are terminally ill and who cannot be cared for at home due to unavailable and/or unstable family or live-in support and may utilize: <ul style="list-style-type: none"> - skilled nursing care and other services such as IV analgesia or alimantal support - social services and pastoral care - rooming-in facilities for family members • Hospice: Independent facility for terminally ill (e.g., Jocelyn House type set-up).

Category	Criteria/Definition
Rehabilitation	Patients who are not receiving an acute level of care but require 24-hour supervision and assessment by a team of rehab personnel or who are receiving a therapy program planned by rehab personnel which is delivered daily. The patient may then be expected to be discharged fully restored or transferred to a home-based program or to another level of accommodation (e.g., HSC Rehab, Riverview, Deer Lodge and other Extended Treatment Units).
Personal Care	Patients who require long term care in a 24-hour supervised setting, who can no longer be cared for at home and whose care needs could be met by admission to a long term care facility licensed as a Personal Care Home. Accessible through the PCH panelling process only.
Chronic Care	Patients who show little or no potential for rehabilitation, whose care needs cannot be met at home, and who require equipment, treatment or a level of professional supervision (e.g., nursing, medical, respiratory) not usually provided in a Personal Care Home. These individuals must be assessed as eligible by the chronic care panel.
Minimal Supervision Residence	<ul style="list-style-type: none"> • Patients who require non-skilled care and 24-hour accessibility to support and who cannot be cared for at home due to unavailable and/or unstable family or live-in support (e.g., Guest Home) • Patients who have special housing needs (e.g., disability, seniors housing)
Other	<p>“Other” days should be assigned to:</p> <ul style="list-style-type: none"> - patients who require respite care to relieve the caregiver - patients who require room-in centres for alcohol and drug dependencies - patients who require protection/crisis intervention (e.g., safe homes, half-way houses, suicide treatment centres)

APPENDIX II: Most Responsible Diagnoses Received By Medical Patients who were Assessed As Requiring Observation-level Services on the day of Admission

Most Responsible Diagnoses	Most Responsible Diagnoses
- Abdominal pain	- Gastritis and duodenitis
- Acute delirium	- Gouty arthropathy
- Acute ill-defined cerebrovascular disease	- Hemorrhage: GI tract, unspecified
- Acute myocardial infarction	- Hypertensive renal disease
- Acute myocarditis	- Hypo-osmolality; hyponatremia
- Acute pancreatitis	- Inadequate material resources
- Acute tonsillitis	- Idiopathic proctocolitis
- Alkalosis	- Influenza with other respiratory manifestation
- Alzheimer's	- Intestinal obstruction
- Arteriosclerotic dementia with delirium	- Intracerebral hemorrhage
- Asthma	- Left heart failure
- Angina	- Lumbosacral spondylosis without myelopathy
- Atrial fibrillation	- Malaise and fatigue
- Calculus of ureter	- Malignant neoplasm of bronchus and lung; brain; liver
- Cardiac dysrhythmias	- Medical services not available in home
- Cellulitis/abcess of leg	- Myalgia and myositis
- Cerebral artery occlusion	- Non-infective enter/colitis of small intestine
- Chest pain	- Pain in limb
- Chronic obstructive bronchitis	- Parkinson's: paralysis agitans
- Chronic pulmonary heart disease	- Paroxysmal ventricular tachycardia
- Chronic renal failure	- Pathologic fracture
- Cirrhosis of liver	- Peritonsillar abcess
- Congestive heart failure	- Pleural effusion
- Convulsions	- Pneumonia
- Coronary atherosclerosis	- Poison: anti-rheumatics
- Debility, unspecified	- Pulmonary embolism and infarction
- Degeneration of lumbar or lumbosacral intervertebral disc	- Sciatica
- Diabetes	- Senile and pre-senile organic psychotic conditions
- Dizziness and giddiness	- Senile dementia with delusional or depressive features
- Duodenal ulcer, acute with hemorrhage	- Transient cerebral ischemia
- Emphysema	- Transient organic psychotic conditions
- Epistaxis	- Urinary tract infection
- Fracture: pubis (closed)	

The most responsible diagnosis refers to the diagnosis which contributed the most to the patient's stay in hospital. Upon inspection some of these diagnoses may seem inappropriate to an observation patient, for example, acute myocardial infarction, atrial fibrillation, pleural effusion. However, this group of patients was hospitalized from 1 to 159 days. Therefore some of these diagnoses correspond to the portion of the hospitalization that required acute care rather than observation services.

APPENDIX III: Diagnostic Tests and Procedures Received by Medical Patients who were Assessed as Requiring Observation-level Services on the Day of Admission

Diagnostic Tests and Procedures

- Angiocardigraph
- Application of cast
- Arthrocentesis
- biopsy: bone; bone marrow; breast
- CT scan: head; abdomen; thorax
- Closed biopsy kidney (needle;percutaneous)
- Contrast myelogram
- Coronary arteriography
- Dialysis: hemodialysis; peritoneal
- Endoscopic insertion of stent into pancreatic duct
- Endoscopy of small intestine
- Esophogogastroduodenoscopy with closed biopsy
- Excision of lesion; tissue; skin
- Gastroscopy
- Interruption of vena cava
- MRI: brain, brain stem; spinal cord
- Pacemaker insertion
- Percutaneous endoscopic gastrostomy (PEG)
- Percutaneous transluminal coronary angioplasty (PTCA)
- Spinal tap
- Thoracentesis
- Ultrasound: abdomen; abdomen/retroperitoneum; urinary system

These tests and procedures did not necessarily occur on the day of admission to hospital; they may have been conducted at any point during the patient's hospitalization. Patients who were assessed as requiring observation-level services on the day of admission had a mean length of stay of approximately 14 days (length of stay for this group of patients ranged from 1 through 159 days). Thus, the diagnostic tests and procedures listed in Appendix 3 are intended to provide a broader picture of the types of services received by this patient group at some point during their hospitalization.